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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,846	02/16/2001	Julio Antonio Garceran	2-12-20	3864

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Docket Administrator (Room 3C-512)
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EXAMINER	
PERILLA, JASON M	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding..

Office Action Summary	Application No.	Applicant(s)	
	09/784,846	GARCERAN ET AL.	
	Examiner	Art Unit	
	Jason M Perilla	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 19-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 19-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-9 and 19-25 are pending in the instant application.

Response to Arguments/Amendments

2. Applicant's arguments, see page 6, filed July 12, 2004, with respect to the rejections of claim(s) 1-32 have been fully considered and are persuasive *in light of the amendments to the claims*. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Alelyunas et al (US 6507303).

Claim Objections

3. Claims 21 and 23 are objected to because of the following informalities:

Regarding claim 21, "a plurality of digital signals" is used in lines 2 and 6 and the claim is indefinite because it is unclear if they are the same or different signals. The phrase "said digital signals" in line 3 should be replaced by "said plurality of digital signals" and the phrase "said plurality" in line 7 should be replaced by "said plurality of digital signals".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-9 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley (US 5220557; previously cited) in view of Alelyunas et al (US 6507303; hereafter "Alelyunas").

Regarding claim 1, Kelley discloses a transmission method wherein digital signals converted into analog form are transmitted by figure 1. Figure 1 of Kelley shows digital signals being converted into analog form by digital-to-analog converter 26 and being amplified and transmitted by amplifier 34 and antenna 36. Further, in the notoriously known transmitter of Kelley, the analog signals are up-converted (fig. 1, ref. 30) or shifted in frequency before being transmitted. Kelley does not disclose that the digital-to-analog converter is having a conversion frequency and converting a digital signal having an input frequency to provide an analog signal image at a radio frequency greater than the input frequency, wherein at least one of the input frequency and the conversion frequency is selected in respect to the other such that said analog image falls within a designated communications band. However, Alelyunas teaches a method of processing digital signals into analog form (abstract), said method comprising: in a digital-to-analog converter (fig. 2, ref. 22) having a conversion frequency or sampling frequency f_s (col. 3, line 8), converting a digital signal (via DAC 22) having an input frequency (inherent) to provide an analog signal image (fig. 2; line 20-21) at a radio frequency greater than the input frequency, wherein at least one of the input frequency and the conversion frequency is selected (the input frequency is selected via "Modulator"; fig. 2, ref. 20; col. 3, lines 45-55) in respect to the other such that said analog image falls within a designated communications band (col. 3, line 65 – col. 4,

line 8). The invention of Alelyunas teaches a new method of processing digital signals into analog form wherein the up-converting stage of Kelley would not be required because one of the image outputs of the digital-to-analog converter of Alelyunas may be filtered and amplified directly for transmission (fig. 2; col. 2, lines 45-57; col. 4, lines 61-68). Because the filtered image output of the D/A converter of Alelyunas does not need to be up-converted, the transmission method of Kelley could be made simpler by the use of the digital-to-analog converter of Alelyunas. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the method of processing digital signals of Alelyunas with the analog transmission method of Kelley because the combined method of Kelley in view of Alelyunas would be simpler to implement because it would not require up-converting the output of the digital-to-analog converter before transmission.

Regarding claim 2, Kelley in view of Alelyunas disclose the limitations of claim 1 as applied above. Further, Alelyunas discloses that the method of processing digital signals into analog form further comprises positioning said digital signal within a conversion bandwidth defined as one-half the rate of said converting (fig. 2, output of modulator 20; col. 3, lines 47-55).

Regarding claim 3, Kelley in view of Alelyunas discloses the limitations of claim 1 as applied above. Further, Kelley discloses that the digital signal is part of a plurality of non-overlapping digital signals (figs 4; col. 4, lines 45-65) which are up-converted (fig. 5) and transmitted. Further, Alelyunas discloses that the method of processing digital signals into analog form further comprises positioning said digital signal or plurality of

digital signals within a conversion bandwidth defined as one-half the rate of said converting (fig. 2, output of modulator 20; col. 3, lines 47-55) and converting said plurality of digital signals to produce analog signal images at different transmission frequencies (col. 4, lines 14-40) for transmission by the amplifier and antenna of Kelley. The method of Kelley in view of Alelyunas would apply either in the case of a single digital signal for transmission or in the case of a plurality of digital signals as understood by one skilled in the art and suggested by Kelley.

Regarding claim 4, Kelley in view of Alelyunas discloses the limitations of claim 3 as applied above. Further, Kelley discloses by figure 1 that using the analog signal images for transmission includes providing an analog signal image onto a path (output of D/A converter 26 embodied as the D/A converter method of Alelyunas); amplifying the analog signal image on the path (34); and transmitting the amplified analog signal image using at least one antenna (36).

Regarding claim 5, Kelley in view of Alelyunas disclose the limitations of claim 4 as applied above. Further Kelley discloses that the steps of providing, amplifying and transmitting include: providing a first analog signal image (fig. 4, ref. 42 represented in fig. 5 as part of image ref. 50n) of a first frequency band a second analog signal image (fig 4. one of refs. 44, 46, or 48 represented in fig 5 as part of image ref. 50n) of a second frequency band (col. 5, line 65-col. 6, line 5); amplifying said first analog signal image and said second analog signal image (fig. 1, ref. 34); and transmitting said first amplified analog signal image said second amplified analog signal image (fig. 1, ref. 36). Figure 1 of Kelley does not explicitly illustrate a separate path and antenna for

each of the plurality of analog signal images. However, Kelley does disclose that a set of different antennas may be employed if a single antenna is not compatible with each of the different transmission channels (col. 4, lines 31-35). In such a case, each antenna would be connected to a separate path. Kelley also disclose that the method may utilize various signal modulation techniques such as AM, FM, BPSK, QPSK, or QAM (col. 3, lines 5-11). Hence, Kelley discloses that a separate "path" and a separate antenna may be required for the various signals as shown in figure 4 to be transmitted in the case which the signals would otherwise interfere with each other if they were transmitted on the same antenna. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize a separate amplifier for each of the first signal and the second signal each having an independent transmission path or antenna because it could be required to keep the individual signals from interfering with each other.

Regarding claim 6, Kelley in view of Alelyunas disclose the limitations of claim 4 as applied above. Further, Kelley discloses that a set of different antennas may be employed if a single antenna is not compatible with each of the different transmission channels (col. 4, lines 31-35). Hence, Kelley discloses that a separate "path" and a separate antenna may be required for the various signals as shown in figure 4 to be transmitted in the case which the signals would otherwise interfere with each other if they were transmitted on the same antenna (as applied to claim 5, for instance). Kelley also discloses, in the case which all of the plurality of signals (fig. 4, refs. 42, 44, 46, and 48) are amplified and transmitted together, that a single band-pass filter (fig. 1, ref. 32;

fig. 5, ref. 32) is used to reject the base-band signals and all of the aliased images so that only the one desired aliased image remains (col. 6, lines 6-10). Kelley does not explicitly disclose that a separate filter would be used for each path in the case where the various signals are set upon separate paths. However, in the case where one antenna would be utilized for *each* of the various signals of figure 4 to avoid interference between the signals, a separate "path" may be used for *each* of the different signals. For each path, it would be required to use a separate band-pass filter and amplifier for each signal to accompany each of the separate antennas as disclosed by Kelley because the filter would be used to separate the signals such that they would not interfere with each other. Each of the separate filters for each of the plurality of signals would actually create each of the separate paths of the signals. Therefore, it is obvious to filter a plurality of analog signal images at different frequency bands with separate filters to provide at least one analog signal image of a frequency band corresponding to each of a plurality of paths.

Regarding claim 7, Kelley in view of Alelyunas disclose the limitations of claim 4 as applied above. Further, Kelley in view of Alelyunas disclose selectively producing on each of a plurality of paths at least one analog signal image of a frequency band corresponding to each of said plurality of paths as applied to either of claims 5 or 6 above.

Regarding claim 8, Kelley in view of Alelyunas discloses the limitations of claim 1 as applied above. Further, although it is not explicitly disclosed, Alelyunas implies that the method of processing digital signals into analog form may comprise adjusting a

conversion rate for converting said digital signal to produce said signal image at the radio frequency (col. 3, lines 65-68; col. 4, lines 25-30). While the invention of Alelyunas primarily discloses the placement of image frequencies by adjusting the frequency of the digital frequency to be converted by the modulator (fig. 2, ref. 20; col. 3, lines 45-55), it is apparent by the disclosure of Alelyunas that the sampling frequency of the digital-to-analog converter may be used to alter the frequency of the images of the analog signal. One skilled in the art is aware, according to the disclosure of Alelyunas, that it is *both* the sampling frequency of the digital-to-analog converter and the frequency of the digital signal to be converted which determine the placement of the analog signal images at the output of the converter (col. 3, line 65 – col. 4, line 8). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that the conversion rate for converting the digital signals into analog form may be adjusted to allow for the analog image signals to fall within the wanted radio frequency.

Regarding claim 9, Kelley in view of Alelyunas discloses the limitations of claim 1 as applied above. Further, Alelyunas discloses that the method of processing digital signals into analog form further comprises adjusting a frequency for said digital signal to be converted into analog form to produce said analog signal image at the radio frequency (the input frequency is selected via "Modulator"; fig. 2, ref. 20; col. 3, lines 45-55).

Regarding claim 19, the limitations of the claim are disclosed by Kelley in view of Alelyunas as applied to claim 1 above.

Regarding claim 20, the limitations of the claim are disclosed by Kelley in view of Alelyunas as applied to claim 2 above.

Regarding claim 21, Kelley discloses a transmitter (fig 1) comprising signal processing circuitry configured to receive a plurality of digital signals each having an input frequency (inherent) in non-overlapping portions (fig. 4 and 5) of a bandwidth by a digital-to-analog converter (fig. 1, ref. 26) to create analog signal images (fig. 5) and transmitter circuitry (fig. 1, refs. 34 and 36) configured to use said analog signal images for transmission. Kelley does not disclose that the processing circuitry is further provided to position said digital signals in a conversion bandwidth defined as one-half the rate of said converting; the digital-to-analog converter having an input frequency, and to convert each digital signal of said plurality of digital signals into analog form to produce analog signal images at different radio frequencies, each of which is greater than the corresponding input frequency; wherein the input frequencies are chosen in respect of the conversion frequency, or the conversion frequency is chosen in respect to the input frequencies, such that said analog images fall within one or more designated communication bands. However, Alelyunas teaches a system for processing digital signals into analog form (abstract), said method comprising: a digital-to-analog converter (fig. 2, ref. 22) having a conversion frequency or sampling frequency f_s (col. 3, line 8), converting a digital signal (via DAC 22) having an input frequency (inherent) to provide an analog signal image (fig. 2; line 20-21) at a radio frequency greater than the input frequency, wherein at least one of the input frequency and the conversion frequency is selected (the input frequency is selected via "Modulator"; fig. 2, ref. 20; col.

3, lines 45-55) in respect to the other such that said analog image falls within a designated communications band (col. 3, line 65 – col. 4, line 8). The invention of Alelyunas teaches a new method of processing digital signals into analog form wherein the up-converting stage of Kelley would not be required because one of the image outputs of the digital-to-analog converter of Alelyunas may be filtered and amplified directly for transmission (fig. 2; col. 2, lines 45-57; col. 4, lines 61-68). Because the filtered image output of the D/A converter of Alelyunas does not need to be up-converted, the transmission method of Kelley could be made simpler by the use of the digital-to-analog converter of Alelyunas. Although Alelyunas teaches only one digital signal being converted into analog form, the plurality of digital signals of Kelley could be applied to the converter of Alelyunas as is understood by one having skill in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the system of processing digital signals of Alelyunas with the analog transmission system of Kelley because the combined method of Kelley in view of Alelyunas would be simpler to implement because it would not require up-converting the output of the digital-to-analog converter before transmission.

Regarding claim 22, the limitations of the claim are disclosed by Kelley in view of Alelyunas as applied to claim 4 above.

Regarding claim 23, Kelley in view of Alelyunas disclose the limitations of claim 21 as applied above. Further Kelley discloses that the circuitry provides a first analog signal image (fig. 4, ref. 42 represented in fig. 5 as part of image ref. 50n) of a first frequency band a second analog signal image (fig 4. one of refs. 44, 46, or 48

represented in fig 5 as part of image ref. 50n) of a second frequency band (col. 5, line 65-col. 6, line 5); amplifies said first analog signal image and said second analog signal image (fig. 1, ref. 34); and transmits said first amplified analog signal image said second amplified analog signal image (fig. 1, ref. 36). Figure 1 of Kelley does not explicitly illustrate a separate path and antenna for each of the plurality of analog signal images. However, Kelley does disclose that a set of different antennas may be employed if a single antenna is not compatible with each of the different transmission channels (col. 4, lines 31-35). In such a case, each antenna would be connected to a separate path. Kelley also discloses that the system may utilize various signal modulation techniques such as AM, FM, BPSK, QPSK, or QAM (col. 3, lines 5-11). Hence, Kelley discloses that a separate "path" and a separate antenna may be required for the various signals as shown in figure 4 to be transmitted in the case which the signals would otherwise interfere with each other if they were transmitted on the same antenna. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize signal distribution circuitry having a separate amplifier for each of the first signal and the second signal each having an independent transmission path or antenna because it could be required to keep the individual signals from interfering with each other.

Regarding claim 24, the limitations of the claim are disclosed by Kelley in view of Alelyunas as applied to claim 8 above.

Regarding claim 25, the limitations of the claim are disclosed by Kelley in view of Alelyunas as applied to claim 9 above.

Allowable Subject Matter

6. No claims are allowed.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Perilla
November 1, 2004

jmp

CHIEH M. FAN
PRIMARY EXAMINER